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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/705,955  | 11/13/2003  | Masaru Kuribayashi   | Q78397                      | 6712             |
| 23373   | 7590        | 10/05/2006           | EXAMINER<br>SMITH, TYRONE W |                  |
| SUGHRUE MION, PLLC<br>2100 PENNSYLVANIA AVENUE, N.W.<br>SUITE 800<br>WASHINGTON, DC 20037 |             |                      | ART UNIT<br>2837            | PAPER NUMBER     |

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                    |                         |  |
|------------------------------|------------------------------------|-------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b>             | <b>Applicant(s)</b>     |  |
|                              | 10/705,955                         | KURIBAYASHI ET AL.      |  |
|                              | <b>Examiner</b><br>Tyrone W. Smith | <b>Art Unit</b><br>2837 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

1) Responsive to communication(s) filed on 22 May 2006.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

4) Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-10 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 3/10/06.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiura (6713888) and N'Guyen (4803376) in view of Uchiyama (JP2001-016900).

Regarding Claims 1, 8 and 9. Kajiura discloses a vehicle motor generator apparatus utilizing synchronous machine having field winding which includes a stator (Figure 1 item 120) having three phase armature winding and a rotor (Figure 1 item 110) composed of a field winding (Figure 1 item 111, column 3 lines 37-43) for magnetizing a plurality of field magnetic poles and permanent magnets (Figure 1 item 111, column 3 lines 37-43) for magnetizing 5eld magnetic poles by interaction with the field winding, an IAC-DC and DC-AC) electrical power converter IAC-DC and DC-AC) (Figure 1 item 200) which performs as a rectifier when the rotary machine is operated as a generator (column 9 lines 52-67), and performs as an inverter when the rotary machine is operated as a motor (column 9 lines 52-67)., and a control device (Figure 1item 400., column 9 lines 1-55) for controlling the IAC-DC and DC-AC) electrical power converter.

However, Kajiura does not disclose a control device that controls an electrical power converter or similar so as to restrict the armature current at the time of low speed rotation.

N'Guyen discloses a control method for a motor generator for motor vehicle control which includes stator (three phase armature windings) (Figures 12-14 item 4) and rotor with a field winding (Figures 12-14 item 1), a electronic switching means (converter/inverter) (Figure 1 items Q1-Q6) and electronic control module controls the armature and field current to obtain a desired characteristic (column 12 lines 63-68 and column 13 lines 1-10)', the machine is operated as a motor and the strength of the current flowing in a armature is limited (restricted) to a predetermined value for speed of rotation ranging from zero (low-speed) to a limit value.

However, neither Kajiura nor N'Guyen disclose the control device sets the armature current for starting torque to a smaller value to an extent of the field magnetic flux increased by the permanent magnets.

Uchiyama discloses starter generator, which includes control device (Figure 1 item 4) sets the armature current for starting torque to a smaller value to an extent of the field magnetic flux increased by the permanent magnets (abstract).

It would have been obvious to one of ordinary skill in the ad at the time of invention to use Kajiura's a vehicle motor generator apparatus utilizing synchronous machine having field winding and N'Guyen's control method for a motor generator for motor vehicle control with the addition of Uchiyama's starter generator. The advantage of combining the two would provide a system to regulate the armature in such a way as to limit the intensity of the current flowing in the armature to a predetermined value for rotational speeds from zero speed to a limit value.

Regarding Claim 3. Kajiura discloses a field current control device controlling a field current flowing through the field winding, wherein when the rotary machine is operated as a motor, the control device to reduce the field current at the time of high-speed rotation controls the field current control device. Refer to column 23 lines 36-48.

Regarding Claims 4-6. Kajiura discloses a vehicle motor generator apparatus utilizing synchronous machine having field winding which includes a stator (Figure 1 item 120) having three phase armature winding and a rotor (Figure 1 item 1 10) composed of a field winding (Figure 1 item 111, column 3 lines 37-43) for magnetizing a plurality of field magnetic poles and permanent magnets (Figure 1 item 111., column 3 lines 37-43) for magnetizing field magnetic poles by interaction with the field winding, an EAC-DC and DC-ACJ electrical power converter AC-DC and DC-AC (Figure 1 item 200) which performs as a rectifier when the rotary machine is operated as a generator (column 9 lines 52-67), and performs as an inverter when the rotary machine is operated as a motor (column 9 lines 52-67)., and a control device (Figure 1 item 400,. column 9 lines 1-55) for controlling the AC-DC and DC-AC electrical power converter.

Refer to the abstract.

Regarding Claim 7 where the limitation states the armature current at the time of low speed rotation is limited to 300amperes or below. A particular parameter must first be recognized as a result-effective variable, i.e., a variable, which achieves a recognized result, before the determination of the optimum or workable ranges of, said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Claim 7 provides a range from 300 amperes or below which can be considered a routine range. Refer the Chapter 2100 section 2144.05 of the M.P.E.P.

3. Claims 10 and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiura (6713888) and N'Guyen (4803376) in view of Uchiyama (JP2001-016900) as applied to claims 1-9 above, and further in view of Asao et al (JP11-136913).

Regarding Claims 10 and 11. Kajiura discloses a vehicle motor generator apparatus utilizing synchronous machine having field winding which includes a stator (Figure 1 item 120)

having three phase armature winding and a rotor (Figure 1 item 110) composed of a field winding (Figure 1 item 111, column 3 lines 37-43) for magnetizing a plurality of field magnetic poles and permanent magnets (Figure 1 item 111, column 3 lines 37-43) for magnetizing field magnetic poles by interaction with the field winding, an IAC-DC and DC-AC) electrical power converter IAC-DC and DC-AC) (Figure 1 item 200) which performs as a rectifier when the rotary machine is operated as a generator (column 9 lines 52-67), and performs as an inverter when the rotary machine is operated as a motor (column 9 lines 52-67),, and a control device (Figure 1 item 400., column 9 lines 1-55) for controlling the IAC-DC and DC-AC) electrical power converter.

However, Kajiura does not disclose a control device that controls an electrical power converter or similar so as to restrict the armature current at the time of low speed rotation.

N'Guyen discloses a control method for a motor generator for motor vehicle control which includes stator (three phase armature windings) (Figures 12-14 item 4) and rotor with a field winding (Figures 12-14 item 1), a electronic switching means (converter/inverter) (Figure 1 items Q1-Q6) and electronic control module controls the armature and field current to obtain a desired characteristic (column 12 lines 63-68 and column 13 lines 1-10)', the machine is operated as a motor and the strength of the current flowing in a armature is limited (restricted) to a predetermined value for speed of rotation ranging from zero (low-speed) to a limit value.

However, neither Kajiura nor N'Guyen disclose the control device sets the armature current for starting torque to a smaller value to an extent of the field magnetic flux increased by the permanent magnets.

Uchiyama discloses starter generator, which includes control device (Figure 1 item 4) sets the armature current for starting torque to a smaller value to an extent of the field magnetic flux increased by the permanent magnets (abstract).

However, Kajiura, N'Guyen nor Uchiyama discloses each of the adjacent claw-shaped pole pieces is magnetically shorted by a magnetic bridge element at the periphery of the claw-shaped poles, and the permanent magnets are disposed inside of said bridge elements.

Asao discloses a rotor of rotary electric machines, which includes each of the adjacent claw-shaped pole pieces, is magnetically shorted by a magnetic bridge element at the periphery of the claw-shaped poles, and the permanent magnets are disposed inside of said bridge elements. Refer to the abstract and Figures 1-14.

It would have been obvious to one of ordinary skill in the art at the time of invention to use the inventions as described above in unison, which would provide a rotor of rotary electric machine, which can prevent breakdown of a magnet, which is arranged between the pawl type magnetic poles in order to reduce the amount of leakage of magnetic flux between the pawl type magnetic poles.

### Response to Arguments

4. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Examiner adds Uchiyama's starter generator, which includes control device (Figure 1 item 4) sets the armature current for starting torque to a smaller value to an extent of the field magnetic flux increased by the permanent magnets (abstract).

### Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyrone W. Smith whose telephone number is 571-272-2075. The examiner can normally be reached on weekdays from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan, can be reached on 571-272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tyrone Smith  
Patent Examiner

Art Unit 2837



LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER